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VEGANISM – IS IT A THREAT TO DAIRY? ONGOING BIOSECURITY CHALLENGES **DIVERSIFYING SOURCES OF CAPITAL**
FOR THE PRIMARY SECTORS SHEEP DAIRY MILK INDUSTRY **CYBERSECURITY FOR THE PRIMARY INDUSTRIES**

GRAZING IN FUTURE MULTISCAPES

– FROM THOUGHTSCAPES TO ETHICAL AND SUSTAINABLE FOODSCAPES

Agricultural products reflect the history of our landscape, foodscapes and agricultural systems manifested through soil and plant chemistry, and thereby our health and that of the planet. This article looks at creating sustainable and ethical foodscapes.

Grazing and landscapes

Throughout different landscapes of the world, livestock fulfil essential roles in ecology, agriculture, economies and cultures, including families, farms and communities. Not only do they provide food and wealth, they also deliver ecosystem services through the roles they play in environmental composition, structure and dynamics. Grazing, as a descriptive adjective, locates livestock within a spatial and temporal pastoral context where they naturally graze or are grazed.

In some cases, however, grazing driven by a single and myopic objective of maximising animal production and/or profit has transformed landscapes, diminished biodiversity, reduced water and air quality, accelerated loss of soil and plant biomass, and displaced indigenous flora, fauna and people. Such degenerative landscape transformations have jeopardised present and future ecosystem and societal services, breaking the natural integration of land, water, air, health, and social sphere, and even our own thoughts.

Thoughtscapes, socialscapes and foodscapes – towards healthscapes

Land users, policy-makers and the wider society are calling for alternative approaches to pastoral systems; a call for diversified-adaptive and integrative agro-ecological and food-pastoral systems that simultaneously operate across multiple scales and 'scapes'. There needs to be a paradigm

shift in pastoral production systems and how grazing livestock are managed (grazed) within them. This would be derived initially from a change in paradigm (i.e. our perception of how pastoral production systems provide wealth through the pursuit of health), which requires a change of 'thoughtscapes'.

Building off Aldrich's 1966 definition of landscape – a specific view of a space or scenery from a specific perspective – by thoughts we are referring to the geography of the mind. This is the interaction of the thinker and their spatial and temporal perception(s) of the dimensions of space and time (i.e. the spatial and temporal mindset of the observer, applied to their land, people, food, society, communities and their role in life). In pastoral spaces, alternative thoughts will include paradigm shifts where graziers move away from the one-dimensional and myopic view of contemporary pastoralism. This is where the animals grazing our grasslands are perceived as a source of meat, fibre and milk products only, existing in isolation to the wider landscape and societal functions.

Alternative future landscapes are thoughts – re-imagined – as ethical, creative and sustainable. There is adaptive, generative, re-generative and/or sustainable



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intensification of processes with synergetic adaptive management, to put in place and achieve multidimensional visions and purposes. Adaptive management is the process of learning about (while simultaneously managing) natural resources to reduce associated inherent uncertainty. From this will come a change in collective thinking and practices concerning the agriculture of grazed livestock, crops (or both mixed together) and how communities and cultures (socialscapes) perceive their relationships with the land where they 'graze' (pastures, grasslands and rangelands).

Landscapes are the tables where humans and livestock gain their nourishment (i.e. foodscapes). Foodscapes concepts are used to study public health and food environments, including institutional arrangements, cultural spaces and discourses that mediate our relationship with food. Foodscapes and dietary perceptions (a component of our thoughts) dictate dietary-choice actions and reactions. These are changing as developed countries grapple with diseases related to obesity and developing countries battle regional famines and starvation crises.

Societies are demanding healthscapes and nutraceutical foodscapes and, paradoxically, some are moving away from animal products in pursuit of healthier lives. Animal sources are the most complete protein sources because they contain all of the amino acids we need for optimal health. The heme iron in a red meat steak is the best and most bio-available source of iron, and a small 115 gram serving of beef contains 95% of the daily required intake (DRI) for B12, something you cannot get from plants. Iron and B12 are

two of the most common nutrient deficiencies worldwide according to the US Centre for Disease Control (CDC).

To get the same amount of protein in a 115 gram steak (181 calories) you would need to eat 340 grams of kidney beans, plus a cup of rice which equals 638 calories, and 122 grams of additional carbohydrates. Plant-based diets are at risk of nutritional deficiencies such as proteins, iron, vitamin D, calcium, lysine, selenium, methionine, taurine, creatine, choline and iodine, as well as Omega-3 and vitamin B12. Such deficiencies are related to premature delivery, lower birth weights and post-partum depression, as well as general depression in men. These conclusions have been reported by studies conducted at George Mason University (USA), Section on Nutritional Neurosciences, National Institute on Alcohol Abuse and Alcoholism (USA) and Faculté de Médecine, Sorbonne Paris Cité, Université Paris Descartes (France), amongst others.

Despite our obvious defence of animal protein sources, there is another point to be made around the integrity and contemporary necessity for nutritionally-rich food products sourced from grazing livestock. It is that they originate in *sustainable and ethical foodscapes* that satisfy the moral, spiritual, economic, socio-cultural and biogeophysical requirements (demands) of the human ego.

Creating sustainable and ethical foodscapes with our pastoralscapes

Across the world, rural places are in a state of transition. The recent government focus on curbing the negative externalities of food production within national

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land management and planning bodies has led to an undermining of the autonomy of pastoral farmers. Also, dispersed and isolated attempts at addressing different environmental integrity issues of livestock production and agricultural in general have led to the rise of competing agendas when addressing the complicated social-ecological relationships that produce rural landscapes. The pastoral livestock-landscape-climate-consumption culture nexus is one such system.

The multiple stakeholders producing this system represent many different agendas – environmental compliance, biodiversity conservation, livelihood security, climate change mitigation/adaptation, animal welfare and sustainable consumption, among others. However, their engagement with each other is often assembled through political, intellectual and institutional hierarchies. For example, this pits the interests of pastoral livestock producers looking to expand on their existing business against those fighting to minimise the environmental impacts of primary production or introduce management regimes that address the current and future impacts of climate change. It often seems that the divide between these different interest groups is only growing wider.

The production and consumption of food influences our health and that of the environment. In itself, the notion of foodscape captures different agendas in 'healthier' and 'sustainable' food production, and thus can (if embraced) reduce the gap in such a divide. According to Professor Morgan of Cardiff University, the notion of ethical and sustainable foodscapes involves a wide spectrum of food-supporting values that claim to make a positive contribution to human and environmental health, the local economy and primary producers, animal welfare and biodiversity.

Professor Goodman from the University of Reading adds a utilitarian dimension, in which ethical and sustainable foodscapes are seen as a way of conceptualising and engaging with the processes, politics, spaces and places of the praxis of ethical relationalities embedded and produced in and through the provisioning of food. An ethical relationalities praxis is the practice of engagement between beings and the physical environment, relating specifically to people and the food *they choose* to consume, produce or sell.

For us, an ethical and sustainable foodscape is a conceptual framework that helps us focus on the opportunities to challenge the existing ways of (in this case) pastoral food production, consumption and

commercialisation. This creates a new variety of future trajectories by selecting design over default. For the trajectories to be ethical, and sustainable, they must:

1. Promote community (common unity), i.e. be embedded in a healthy community (integrated-connected) in which animal (including humans) and ecological values are recognised.
2. By food production, consumption and commercialisation, promote integrative health at a small scale and through regional ecosystems.
3. Enhance food security by being socio-ecologically sustainable and inclusive, while creating opportunities not only to eat, but also to farm and sell food.
4. Exert resiliency within the agroecosystem by encouraging taxonomical and biochemical diversity, redundancy (equivalence) and modular spatio-temporal integrations.
5. Ultimately, encourage tight multi-dimensional feedback and feed-forward loops at several scales.

Conclusion

The process of deciding the future of pastoral production systems is often exclusionary, failing to capitalise on the synergies within the spectrum of stakeholders, views, needs and feelings. A solution is using the notion of ethical and sustainable foodscapes as a unifying theme and primary subject in which various systems and people interact. This is the idea at the heart of our multiscale viewpoint (i.e. our iteration, thoughtscape).

*Ko au te whenua,
ko te whenua ko au.
I am the land,
and the land is me.*

Further reading

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